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ABSTRACT

Case study-based teacher education has been advocated since the mid-1980s. The evolution of technology-facilitated, case study-based professional development for adult education professionals may be traced by examining three projects involving the National Center on Adult Literacy and the International Literacy Institute at University of Pennsylvania's Graduate School of Education. The International Literacy Explorer (ILE) is a multimedia teacher-training tool for basic education that is designed to give an overview of literacy and basic education issues and practices in an international context. The ILE offers ideas, discussions, and activities to enrich the thinking of teachers/practitioners, policymakers, and researchers and is available in CD-ROM and Internet versions. Captured Wisdom is an interactive resource that informs educators of successful practices in integrating technology into adult education instruction by presenting seven 20-minute videos of authentic adult education classrooms on 2 CD-ROMs, companion discussions, and a short instruction booklet. The Professional Development Kit (PDK) is a multimedia resource for adult educators that use print, video, CD-ROM, and the World Wide Web. It is organized into three main sections titled as follows: the PDK Community; Investigating Practice; and the Knowledge Databases. These tools combine available instructional technologies in a seamless, unobtrusive fashion to support the growth of adult basic education teachers. (Contains 6 references.) (MN)

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Evolving Uses of Technology in Case-Based Teacher Education

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Abstract: This presentation discusses the evolution of technology-facilitated, case study-based professional development for adult education professionals by examining three projects involving the National Center on Adult Literacy (NCAL) and the International Literacy Institute (ILI) at the University of Pennsylvania/Graduate School of Education. The projects in order of development are the *International Literacy Explorer: A Teacher Training Tool for Basic Education, Captured Wisdom: Stories of Integrating Technology Into Adult Literacy Instruction*, and the *Professional Development Kit (PDK): Multimedia Resources for Instructional Decision Making*. These projects are in various stages of completion and represent an evolving variety of solutions to the challenges of effective, technology-facilitated teacher education. We briefly discuss some of the conceptual background for using the case study method for teacher education and some of the limitations of using written case studies. We then discuss how technology can facilitate the use of case studies in professional development. Finally, we look specifically at the three projects, which were developed over a period of several years, how each responded to the issues raised in earlier projects.

Introduction

In 1986, the Carnegie Task Force on Teaching as a Profession published their report entitled "A Nation Prepared: Teachers in the 21st Century," which recommended using case studies as a major focus of teacher instruction (Carnegie, 1986). Lee Shulman advocated the use of case studies for teacher education, feeling that they were "a good means of connecting theory with practice and of showing that teaching itself was a complex activity that demanded high level decision-making skills (Shulman, 1992, p. 28).

Case studies can be teaching and/or learning tools and the key element is that they are situated in real world contexts. Merseth (1994) saw cases as serving as exemplars, opportunities to practice analysis, and stimulants to personal reflection. Case studies were understood, as they had long been in law and medicine, as ways to hone analysis and decision-making skills with authentic situations. More recently, when Putnam and Borko (2000, p.8) discussed the renewed interest in situated cognition, they pointed out that cases provide vicarious encounters with real classroom environments because they are *situated* by their very nature. Some of the benefits they mention include opportunities for reflection and critical analysis that are not possible when acting in a real classroom setting, exploration of the richness and complexity of authentic pedagogical problems, and shared experiences for groups of teachers to explore together.

The limitations of text-based case studies for teacher education can be summed up by saying that they fail to capture and communicate the reality of the nuances and immediacy of actual classroom settings, just as they fail to capture the drama of a courtroom for aspiring law school students. The tone of voice, facial expressions, and gestures of the teacher as well as the learners give color to the starkness of black and white text detailing case studies. Video provides all of this and more to preservice and in-service teachers.

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The Use of Video in Case Studies for Teacher Education

The introduction of video into case-based teacher education was a great step towards more accurately portraying the complex, real life situations that characterize the reality of teaching. Video is able to capture the complexities and realities of the classroom (including facial expressions and gestures) while providing the time for analysis and reflection that is impossible when actually sitting in a classroom observing. Analysis and reflection are essential for transforming a simple videotaped lesson into a true learning experience for preservice and in-service teachers. Not only can the video be stopped to allow for guided discussion and reflection at various points, but it can also be reviewed several times in order to search for nuances in the teacher's decision process and to examine the action from various different perspectives (learner, teacher, administrator). Unfortunately, linear video without discussion and guidance to help teachers actually change their practice over time is not very effective (Lauro, 1995, p. 65). CD-ROMs, DVDs, videodiscs, and multimedia Internet websites can all help overcome the limitations of linear video viewing and increase teachers' interaction with the case. In this way, teaching is seen more realistically – as a multifaceted problem-solving process.

Each of the media mentioned above has its own characteristic benefits. Linear videotape is important for conveying a sense of the overall lesson and the flow of the classroom. Videodisc technology has the benefit of allowing teachers to quickly focus on specific, shorter segments of the whole and therefore interact more immediately with the material (Atkins, 1998). The Internet and its innumerable websites add (a) the dimension of anytime/anywhere learning; (b) the capacity to utilize listservs, chats, bulletins boards, and so forth for communication; and (c) access to the most current materials through relatively easy and inexpensive updating. The following section will discuss how the various media were utilized in the three technology-facilitated NCAL/ILI professional development projects for adult education teachers.

The Evolution of Three Multimedia Professional Development Projects

Quality professional development that actually changes current practice (and its outcomes – adult learning) is one of the keys to effective adult instruction just as it is to effective K-12 instruction. The National Center on Adult Literacy and the International Literacy Institute at the University of Pennsylvania have been working on solutions to this challenge for well over a decade. The following three projects were designed and implemented by many of the same team members and therefore benefited greatly from the experiences and lessons learned in all of other projects.

International Literacy Explorer: A Teacher Training Tool for Basic Education

The *International Literacy Explorer* (ILE) is a multimedia teacher training tool for basic education designed to give an overview of literacy and basic education issues and practices in an international context. The *Explorer* offers ideas, discussions, and activities to teachers/practitioners, policymakers, and researchers in order to enrich literacy thinking. In the context of the worldwide effort to more fully and effectively increase the literacy skills of all people, the *Explorer* focuses on several innovative, useful, and/or effective literacy projects and programs across the globe. Also included are supplementary sections on general literacy concepts and statistics to help the user to better understand the consequences of widespread illiteracy, the need for and importance of literacy education, and the achievements of the specific literacy projects. The *Explorer* has four main sections: "Literacy Overview," "Literacy Projects" (case studies), "Statistics," and "Resources." The product is available free in its most up-to-date state on the Internet (www.literacy.org/explorer/index.html) and also in the original CD-ROM version.

The "Literacy Projects" section contains 12 case studies grouped under the following headings: Language and Culture, Gender and Development, Teaching and Learning, Quality and Innovation, and Technology for Learning. Each individual case study contains the following elements: (a) Background (the issue in brief and in

that country's context), (b) Overview of the Project, (c) Activities (teacher/practitioner focused), (d) Outcomes and Implications (researcher and policymaker focused), (e) Resources, and (f) Questions. The case studies are quite text heavy and represent an almost *textbook* model of case study methodology. Short segments (10 to 20 seconds) of video are in the Activities sections and there is the potential for some interactivity on the Questions pages, where users can email the creators of the site with inquiries.

The benefits of using technology for this project were multiple and at several levels. Although it was originally planned solely as a CD-ROM (so as to be available in locations where Internet access was minimal), the developers, who were located in several different countries, found it most efficient to design on the web for ease and rapidity of communication. The website was then simply transferred to CD-ROM and involved only the challenge of making the database functional. While it was useful to have the information on the web in terms of a wider audience, the time length of the videos was severely restricted by connection speed over what might have been possible on CD-ROM. The benefit of that decision, however, was that the videos were very targeted and to the point, so viewers actually watched them in their entirety as opposed to what often happens when users move on without completing the videos or just read the transcripts. Because of the hyperlinking potential of the web, multiple perspectives could be delineated for those users with limited time to browse. Thus teachers/practitioners could jump directly to the Activities sections of all 12 case studies and researchers/policymakers could likewise jump directly to the Outcomes and Implications sections without destroying the integrity and flow of the site as a whole. The "Help" (FAQs) section of the website not only walks the user through the organization and navigation, but provides specific suggestions to the various user groups on how to use the site as a professional development tool.

Our retrospective view of the website is that it (a) is probably too text heavy for a website, (b) would benefit from an effective mechanism for information sharing (such as a database interface for new case studies, resources, etc. and a discussion board), and (c) needs an efficient means of updating. The Questions page could have been expanded with some discussion and reflection questions to enrich the user's learning experience. We do see the site as most effective as a stimulus for group discussion and reflection during guided professional development activities. We know that it has been used that way as well as a resource for college classes and for individuals in various countries throughout the world.

Captured Wisdom on Adult Literacy: Integrating Technology Into Adult Literacy Instruction

Captured Wisdom (www.literacy.org/capturedwisdom.html) is an interactive resource that is designed to help inform educators of successful practices of integrating technology into adult education instruction. Innovative, replicable activities are shown, described, and discussed by front-line classroom educators and learners so that other teachers feel that they have had an opportunity to actually visit and chat directly with the learners and teacher about their work together. The two CD-ROM set contains 7 different 20 minute videos of authentic adult education classrooms. To develop each of the *Captured Wisdom* stories, teachers and learners were filmed describing and demonstrating how they use technology in classroom-based projects. Each edited, videotaped segment was then viewed by focus groups of adult educators. These educators wrote down questions that they wanted to ask the teacher. The focus group teachers felt the answers to these questions would prepare them to use activities in their own classrooms. The questions were divided into the following categories: Learners, Instructional Activities, Project Management, Technology Issues, and Products and Assessments and directed to the presenting teacher. Responses were tape-recorded and included as companion segments on the CD-ROM. This development process assured that the implementation needs and concerns of real teachers in real adult education programs were addressed. Also included with the set is a short instruction booklet that explains how to use the *Captured Wisdom* CD-ROMs effectively in professional development. The video vignettes (case studies) are also available on two videocassettes with an accompanying booklet for professional developers with suggested activities on how to use the vignettes in group professional development on topics as varied as alternative assessment, multidisciplinary teaching, and project-based learning. The model for *Captured Wisdom* was developed by the North Central Regional Education Laboratory (NCREL) for K-12 teachers and was extended to address the needs of adult literacy instruction by NCAL.

The *Captured Wisdom* CD-ROMs enrich the experience of linear video for adult education professional development with the questions and answers (in text and audio) posed by real life teachers about the

implementation of the technology integration in their classrooms. Although there is no specific mechanism for information sharing and easy updating with *Captured Wisdom*, the focus group questions and answers provide additional insightful comments about the classroom experience viewed on the video. These can lead to further discussion and reflection on the part of individual teachers or groups of teachers. The print booklets that accompany both CD-ROM sets and videocasette sets contain suggestions and activities that can be used directly by professional developers or groups of interested teachers seeking to improve their practice.

The portability of the self-contained CD-ROMs is a distinct advantage over web-based, video-enhanced professional development that necessitates a fast Internet connection. The CD-ROM medium can contain substantial video segments and is extremely inexpensive to produce. However, without a projection system, the CD-ROM provides a relatively private experience of the product on a single computer screen. There has been discussion of adapting this product for the web, but the length of the videos is problematic. Considerable adaptation would have to take place to customize the videos for typically impatient web "consumption." The videocassettes of the vignettes are more easily shown on large size TV screens to groups, whether they are preservice/in-service teachers, administrators, or board members.

There has been considerable feedback on this product, which has been available for about a year. Professional developers have used it with much enthusiasm as have literacy program directors who have shown it to their funding boards as a vision building exercise for how technology can motivate learners and contribute to their learning.

Professional Development Kit (PDK): Multimedia Resources for Adult Educators

The *Professional Development Kit* (PDK; www.literacy.org/pdk.html) is a multimedia resource for adult educators that utilizes print, video, CD-ROM, and the depth, flexibility, and complexity of the web. It consists of a reflective framework that supports participants' efforts to generate questions and brainstorm solutions to challenging professional situations. PDK aims to support community-building and collaboration among adult educators by providing opportunities and tools for communication. PDK consists of a variety of resources, including

- 10 hours of video investigations containing interviews with learners, teachers, researchers, and administrators; examples of classroom practice; and in-depth exploration of specific topic areas such as ESL, ABE, GED, math, writing, assessment, integrating technology, and much more;
- a website that contains online tools such as discussion boards; teacher portfolios with self-assessment activities, data collection suggestions, action plan infrastructures, and reporting frameworks; and
- five knowledge databases to search related resources, and a participant's guide that describes the system and identifies possible applications in various contexts.

The three main sections of PDK are the "PDK Community," "Investigating Practice," and the "Knowledge Databases." The "Investigating Practice" section contains 5 video case studies called Classroom Investigations. Each of these includes (a) a 15 to 20 minute narrative with teacher reflection and student reaction, (b) a highlights video section of 5 minutes about the specific lesson, and (c) topic area videos of about 2 to 3 minutes that address techniques or skills that the teachers use to deal with the issues of learner anxiety, motivation, diversity, and disabilities, just to name a few. The taping and editing of the 10 hours of video took place over a 3-year period of time. The role of the video was not to create a model of perfect teaching, but rather to capture what was happening in an actual classroom as well as teacher' and students' reflections about those interactions.

Although PDK videos are available on conventional videotapes for viewing in group or classroom settings, the full power of the program can only be experienced through the interaction of all the components on the web and on CD-ROM. The CD-ROM contains the Quicktime™ video that is accessed from within the computer's CD-ROM drive as one navigates through the different organizational elements of the PDK website. In this way, the user is not hampered by Internet connection speed for the delivery of significant amounts of video. This carefully
edited video is surrounded with the resource and communication structures of a comprehensive website.

The "PDK Community" is composed of a My Portfolio section (self-assessment activities, data collection, action plans, reporting frameworks with all information saved to an individual's personal online portfolio) and Discussion Boards (for national as well as small group listservs with tools for creation and management). The My Portfolio areas contain information and learning activities that help users articulate questions about their practice, brainstorm creative solutions, implement plans, and write up the results of this process. Not only can users keep track of their own development, but they can participate in larger learning communities via the discussion boards. This leverages technology's capacity to connect people and ideas in information-sharing activities.

The online, searchable "Knowledge Databases" is divided into 5 parts that complement the PDK learning activities. The 5 parts are (a) PDK practitioner reports (contributed by participants in the program), (b) PDK TIPs (short papers providing information on integrating research and theory into teaching contexts), (c) online articles complementing the video case studies, (d) professional development resources (annotated list of online resources with links to conference information and other learning opportunities), and (e) lesson plans. This database will continue to grow with contributions from users of the PDK system and it leverages technology's capacity to store and then locate large amounts of information.

Although this project is not yet complete, prototypes have been tested and used in professional development groups with positive feedback. The community section currently hosts many small groups of practitioners from various areas of adult education and the databases contain materials selected for their appropriateness to the issues presented. The product will be most effective in facilitated group professional development with the extra benefit that the group can be virtually present (via the Internet) if not physically present in one room.

Brief Analysis of the Projects

The ILE began with the goal of providing a readily accessible teacher education tool for adult basic education by utilizing video case studies and information and communication technologies for delivery. The limitations of web-based video delivery resulted in very short videos and a quasi-textbook model. The *Captured Wisdom* CD-ROMs and videotapes *captured* classroom practice and complexity more realistically and allowed for more substantial video and actual teacher questions and answers. However, the presentation on CD-ROM was relatively static and unable to respond to user's questions and personal professional development. PDK, which encompasses print, extensive video on CD-ROM, and a comprehensive web-based structure, truly uses the available technology in a seamless, unobtrusive fashion. All the technology tools work together to support the growth of teachers.

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